chemical etching and laser technology
for complex geometries and smallest dimensions
Chemical Machining S.p.A. is a company which produces components through photochemical etching and laser micro-cutting.

CM, founded in 1970, was one of the pioneers on the market of photochemical etching and has succeeded in the market in Italy through continuous growth and quality improvement.

Field of activities
- Electronics and electromechanics
- Medical technology
- Telecommunications
- Automotive
- Optical industry
- Fashion industry
- Seals
- Prototypes

Product portfolio
- EMV Components
- SMT Electronics
- SMT STENCIL foils
- SMT Silkscreen printing screens
- Electrical connectors
- Model production
- Filter
- Design elements

And much more!

Advantages of photochemical etchings
- With the chemical etching process components can be produced with a sheet thickness between 0.01mm and 2mm.
- Nearly any metal can be processed.
- Complex contours are produced without any extra charge.
- The complexity of a component depends on the process time (production time). The process time is affected by the material thickness, which is why complex contours are cost neutral.
- Rapid delivery of components
- Components display a consistent quality. Thermal influences do not cause any delays.
- No tools costs.

Specific to the product
Through half-etched bending lines flat sheets can be bent into three-dimensional components.

The amount of holes, bores or breakthroughs has no influence on the process time.

The edges of bodies differ from that of a die cut / cut edge.

Processing on both sides of the surface in one-step process.

Flat sheet metal can be bent by half-etched bending lines to three-dimensional components.
**Basic data**
- Represented on the market since 1970
- 7 single chamber machines
- 2 double chamber machines
- 3 Laser-Cutting Machines
- 50 employees

**Processes**

**Photochemical etching**
- ferrous, nickel, brass and copper alloys, aluminium

**Processible material thickness and tolerances**
- 0.01 – 2 mm ± 10% material thickness
  - (minimum ± 0.015 mm)

**Laser Cutting (micro cutting)**
- titanium, aluminium, nickel alloys, carbon and stainless steels,
- all kind of plastic from 3 to 60 mm.

**Processible material thickness and tolerances**
- Laser type 1: up to 0.5 mm ± 0.02 mm;
  - 0.5 mm - 2 mm ± 0.03 mm
  - up to ± 0.05 mm.
- Laser type 2: 0.05 – 0.8 mm ± 0.015 mm

**Quality**
- Optical survey equipment
- Quality certifications:
  - UNI EN ISO 9001:2000,
  - Certificate Nr 50 100 1533,
  - Manufacture of phototools for metal parts by chemical milling (EA09)

**Location**
- Mailand, Italy
- Bingen am Rhein, Germany

**Combination chemical etching and laser cut**

Since middle of the 80’s the laser technology is established to produce finest contours. CM as an pioneer of the etching technology, combines the advantages of the Laser-cut with the excellent characteristics of chemical etching.

**The etching process**

The exact etching shapes or surfaces derive from the CAD drawing, provided by the customer or us, will be imprinted on two exposure films (tool).

The metal sheet will be laminated with a UV-sensitive coating, which after exposure becomes resistant to the etching medium. This composite will be covered by the tools and exposed to UV light on both sides.

All coating areas that during the exposure cycle have not been covered with the imprinted surfaces of the exposure film (tool) become resistant to the etching medium.

In the next process step, the coating is removed from all the other unexposed surfaces and contours.

In the following chemical etching procedure, all metal areas without coating are etched away.

After etching the remaining coating will be removed.

Prior to delivery, a comprehensive optical and metrological quality control is conducted.
Industrial representation

We handle requests on-time and target oriented. Any project themes can be discussed with us at your location. Support for processes and cost-effective components development is offered both by us and our partners. Our business partners possess the standard quality certifications, so you can be sure that all standards currently in effect are met. For your queries we are at all times your professional on-site contact partner. Components development is carried out and supervised by us close to the customer, from our location in the Rhine- Main-Area. Our company’s partners possess commercially-available quality certifications, so that you can be sure that all standards are being continually met.

Industrial representation | projectmanagement | development

stigro GbR is an industrial representation division with engineering / construction services. Our industrial representation works for medium-sized European companies that would like to strengthen their position or develop a new market.

Our business activities include industrial representation with marketing, sales and technical support, as well as project management, the development and construction of individual parts and assemblies.

Both foreign suppliers and domestic customers in Germany benefit from it. We offer our engineering services primarily for the development and construction of plastic, pressure die casting and sheet metal parts.

Engineering services

We offer our engineering services primarily for the development and construction of plastic, pressure die casting and sheet metal parts.

Projectmanagement

We carry out project management for you, from the concept to the finished part.

Development & construction

We cover all engineering activities from drawings to the finished product. Complete component development is carried out directly by us close to the customer, at our location in the Rhine-Main-Area. We are at all times your professional on-site contact partner.

We possess modern CAD and CAE software, e.g. CATIA, to carry out all development steps at the highest technical level.

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